

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
APPLICATION FOR UNITED STATES PATENT**

*Title:* **HELMET HEAD CUSHION**

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## **HELMET HEAD CUSHION**

### **FIELD OF THE INVENTION**

[0001] This invention pertains to headwear, in general, and to a cushion for a helmet, in particular. The cushion is particularly well adapted for combat helmets and the like.

### **BACKGROUND OF THE INVENTION**

[0002] Combat helmets currently in use have Kevlar or projectile resistant helmet that have a web type suspension. One problem with such helmets is that the web suspension rests on the top of the wearer's head. Many wearers, have shaved heads, or such short hair that the web suspension chaffs or rubs.

[0003] It is highly desirable to provide a cushion that will be usable with combat helmets and the like that is comfortable and has anti-microbial, ant-bacteria, and/or anti fungal properties.

### **SUMMARY OF THE INVENTION**

[0004] In accordance with the principles of the invention, a cushion is provided for use in helmets. The cushion includes one or more hydrophilic foam bands or cores. Each foam band or core is contained within a fabric covering the foam band. In accordance with one

aspect of the invention, the fabric is a moisture wicking fabric. The cushion is removably attached to the suspension webbing of a helmet.

**[0005]** In accordance with one aspect of the invention, the foam band is treated to be resistant to at least one of microbes, bacteria, and fungi.

**[0006]** In the illustrative embodiment of the invention, the cushion is attached to the webbing of the helmet by means of hook and loop fasteners.

**[0007]** In the sweat band of the illustrative embodiment the cushion comprises a plurality of strips carrying hook and loop type fasteners. Each of the plurality of strips is utilized for securing the sweat band to the web portion of a helmet such that the cushion is carried in the top of the helmet to cushion the head of a wearer from the suspension webbing.

**[0008]** Still further in accordance with the principles of the invention, a helmet is provided comprising a protective helmet body. A suspension is carried within the helmet body. A cushion is removably carried in the helmet body proximate the suspension to cushion the top of the head of a wearer. The cushion comprises a cushion portion and an attachment portion. The cushion portion comprises one or more hydrophilic foam portions and covered with fabric. In accordance with one aspect of the invention, the fabric is a moisture wicking fabric. The attachment portion comprises webbing affixed to the cushion portion and carrying a plurality of hook and loop fastener strips carried by the webbing for releasable affixing the cushion to the suspension.

**BRIEF DESCRIPTION OF THE DRAWING**

[0009] The invention will be better understood from a reading of the following detailed description of preferred embodiments of the invention in conjunction with the drawing figures in which the sizes of and distances between various elements is not representative of actual physical sizes or distances between various elements, and in which:

[0010] FIG. 1 is a bottom view of a helmet to which the cushion of the invention is particularly well adapted;

[0011] FIG. 2 is bottom planar view of a cushion in accordance with the principles of the invention;

[0012] FIG. 3 is a top view of the cushion of FIG.2;

[0013] FIG. 4 is a planar view of a subassembly of the cushion of FIG.2;

[0014] FIG. 5 is a planar view of another subassembly of the cushion of FIG. 2;

[0015] FIG. 6 which appears on the same sheet as FIG. 1 is a cross-section taken along lines 6-6 of FIG. 5;

[0016] FIG. 7 which appears on the same sheet as FIG. 1 is a cross-section taken along lines 7-7 of FIG. 5;

[0017] FIG. 8 illustrates the cushion of FIG. 2 installed in the helmet of FIG. 1; and

[0018] FIG. 9 is a cross-section taken along lines 10-10 of FIG. 9.

### **DETAILED DESCRIPTION**

[0019] Turning to FIG. 1, a representative helmet 700 to which the present invention is advantageously applied is shown in bottom view. Helmet 700 includes a protective helmet body 701. A suspension 703 is carried within helmet body 701 and includes a headband 705. Suspension 703 includes web portions 707 that are connected together by tie 709 that is used to adjust the fit of helmet 700 to a wearer.

[0020] A helmet cushion 100 in accordance with the principles of the invention is shown in FIGs 2 and 3. Cushion 100 includes one or more cushion portions 101 and one or more corresponding attachment portions 103. In the illustrative embodiment shown Cushion 100 includes a plurality of cushion portions 101 arranged to cushion each of suspension web portions 707. Each cushion portion 101 is formed from a piece of moisture wicking fabric 111 such as COOLMAX® which is a high tech fabric available from Dupont. This fabric is made from specially engineered polyester fibers with an

increased surface area. The surface 101a of the fabric 111 in contact with skin pulls moisture away from the skin to its opposite surface.

[0021] The moisture wicking fabric 111 is fabricated into a flat tube containing a core 107 shown in FIGs. 6 and 7. Core 107 is hydrophilic foam that includes antibacterial, anti-microbial, and/or anti-fungal agents to eliminate odor and other unpleasant effects of extended use. The hydrophilic foam is commercially available. The foam has integrated therein water absorbent polymer crystals, such that the foam will absorb moisture such as sweat that is passed through fabric 111. One source of such foam padding is Lendell Manufacturing, Inc.

[0022] By using a moisture wicking fabric 111 in combination with hydrophilic foam 107, an extremely comfortable cushion 100 that provides double moisture removal is provided.

[0023] Each cushion portion 101 is formed to contain foam core 107 by folding the fabric 111 over foam pad or core 107 and closing the ends and top of the fabric 111. In the illustrative embodiment of the invention, closure of the ends and the top is accomplished by sewing.

[0024] Cushion portion 101 has affixed thereto webbing 103. The outer ends of each webbing 103 carries a hook and loop fastener, such as a Velcro™ loop strip 105. Each strip 105 has a hook portion on one surface and a loop portion on its other surface.

[0025] To install cushion 100 in helmet 700, cushion 100 is inserted into helmet 700 with strips 105 entering helmet 700 first. Cushion 100 is placed against suspension webs 707, with each strip 105 being proximate a corresponding one suspension web 707. Strips 105 are then wrapped around webs 707 and affixed to themselves. Strips 105 thus are used to releasably affix cushion 100 into helmet 700.

[0026] It will be understood and appreciated by those skilled in the art that the cushion may take on different configurations without departing from the spirit or scope of the invention.

[0027] It will be appreciated by those skilled in the art that the helmet shown in the drawing figures is intended to be representative of a combat helmet, but the invention is not limited to any particular helmet shape or type. Still further, the invention is not limited to the particular suspension configuration shown in the drawing figures. The invention is equally applicable to different suspension configurations and suspension attachments to helmets.

[0027] The invention has been described in terms of various embodiments. It is not intended that the invention be limited to the illustrative embodiments. It will be apparent to those skilled in the art that various modifications and changes may be made to the embodiments without departing from the spirit or scope of the invention. Accordingly, it is intended that the invention be limited only by the claims appended hereto.